



# JUnit 4

# JUnit

- JUnit is a java framework written by Erich Gamma and Kent Beck.
- It is used to implement unit tests in java.
- There are suitable frameworks for other programming languages such as C# (NUnit) , JavaScript (JSUnit) ...

# JUnit 3.8 vs JUnit 4

JUnit 3.8	JUnit 4
naming conventions	annotation
GUI is available	omitted GUI

\*The older version is still compatible in JUnit 4

# JUnit 3.8

```
import junit.framework.TestCase;
public class TestGCD extends TestCase {

    GCD gcd = null;

    public void testGCD(){
        gcd = new GCD();
        assertEquals(5, gcd.getGCD(10,5));
    }
}
```

# JUnit 4

```
import static org.junit.Assert.*;
import org.junit.Test;

public class TestGCD {

    GCD gcd = null;

    @Test
    public void CheckGCD(){
        gcd = new GCD();
        assertEquals(5, gcd.getGCD(10,5));
    }
}
```

# Test Fixture

- Common set of objects want to be used in two or more test cases.
- Avoid duplicating the code
- Created and destroyed by `setUp()` and `tearDown()`

# JUnit 3.8

```
public class testFixture extends TestCase{
```

```
    Calculate calculate = null;
```

```
    public void setUp() throws Exception {calculate = new Calculate();} 1 4
```

```
    public void tearDown() throws Exception {calculate = null;} 3 6
```

```
    public void testAdd() {assertEquals(30,calculate.Addition(10,20)); } 2
```

```
    public void testSub() {assertEquals(-10, calculate.Subtraction(10,20));} 5
```

```
}
```

# JUnit 4

```
public class testFixture {  
    Calculate calculate = null;
```

```
    @Before
```

```
    public void initialize() throws Exception {calculate = new Calculate();}
```

```
    @After
```

```
    public void cleanObject() throws Exception {calculate = null;}
```

```
    @Test
```

```
    public void Add() {assertEquals(30,calculate.Addition(10,20));}
```

```
    @Test
```

```
    public void Sub() {assertEquals(10,calculate.Subtraction(10,20));}
```

```
}
```



# Testing Exceptions

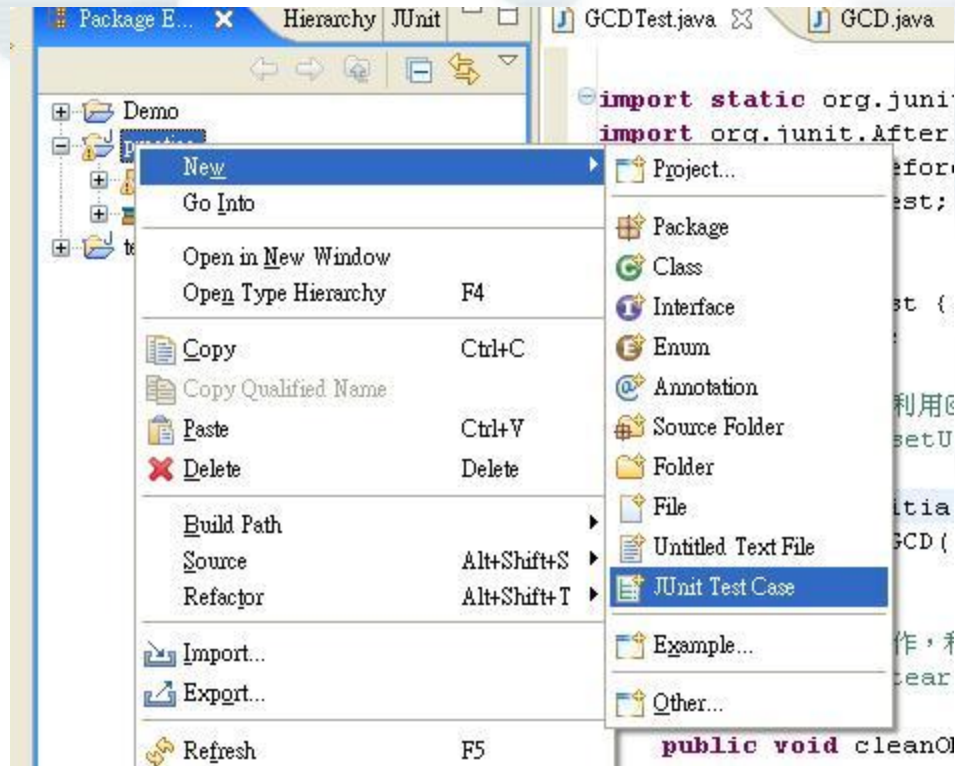
## JUnit 3.8

```
public void testDivisionByZero() {  
    try {  
        calculate.division(1,0);  
        fail("Didn't catch the expected exception !");  
    }  
    catch (ArithmeticException success) {  
        assertNotNull(success.getMessage());  
    }  
}
```

## JUnit 4

```
@Test(expected=ArithmeticException.class)  
public void testDivByZero(){  
    calculate.division(1,0);  
}
```

# JUnit in Eclipse



# JUnit in Eclipse(Cont.)

**New JUnit Test Case**

Select the name of the new JUnit test case. You have the options to specify the class under test and on the next page, to select methods to be tested.

☐ New JUnit 3.8.1 test ☒ New JUnit 4 test 選取JUnit版本

Source folder:

Package:

Name:

Superclass:

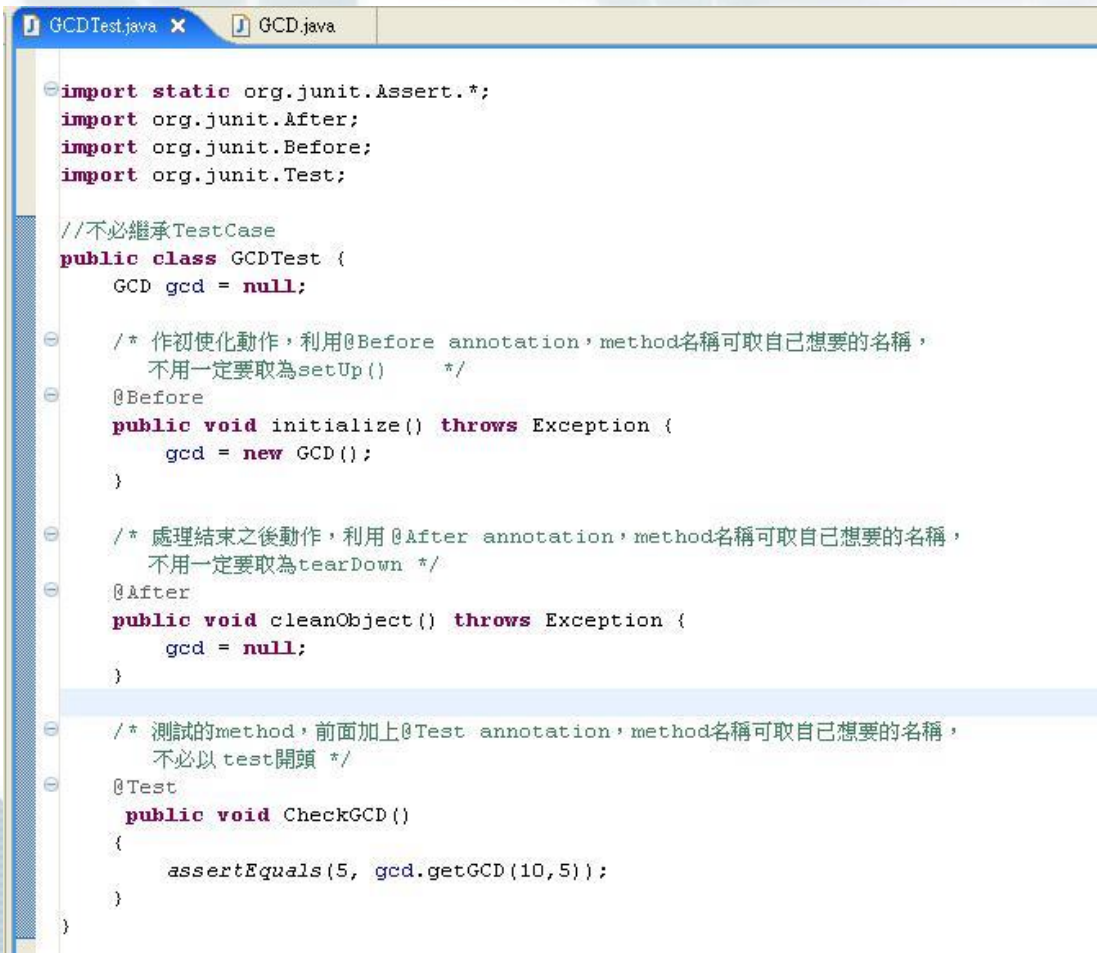
Which method stubs would you like to create?

☐ setUpBeforeClass() ☐ tearDownAfterClass()  
☒ setUp() ☒ tearDown()  
☐ constructor

Do you want to add comments as configured in the [properties](#) of the current project?  
☐ Generate comments 選取一開始要自動產生的method

Class under test:

# JUnit in Eclipse(Cont.)



```
import static org.junit.Assert.*;
import org.junit.After;
import org.junit.Before;
import org.junit.Test;

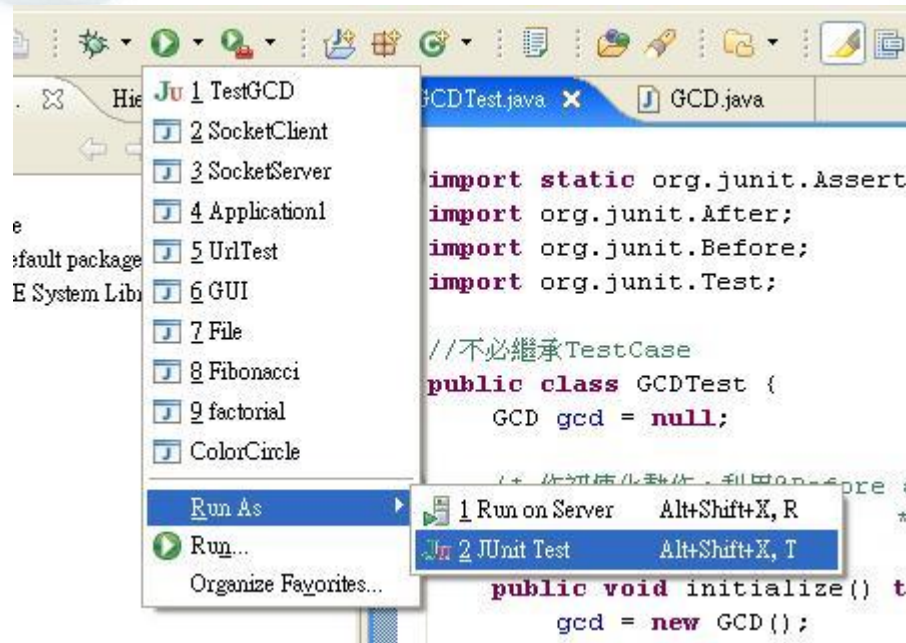
//不必繼承TestCase
public class GCDTest {
    GCD gcd = null;

    /* 作初始化動作，利用@Before annotation，method名稱可取自己想要的名稱，
       不用一定要取為setUp() */
    @Before
    public void initialize() throws Exception {
        gcd = new GCD();
    }

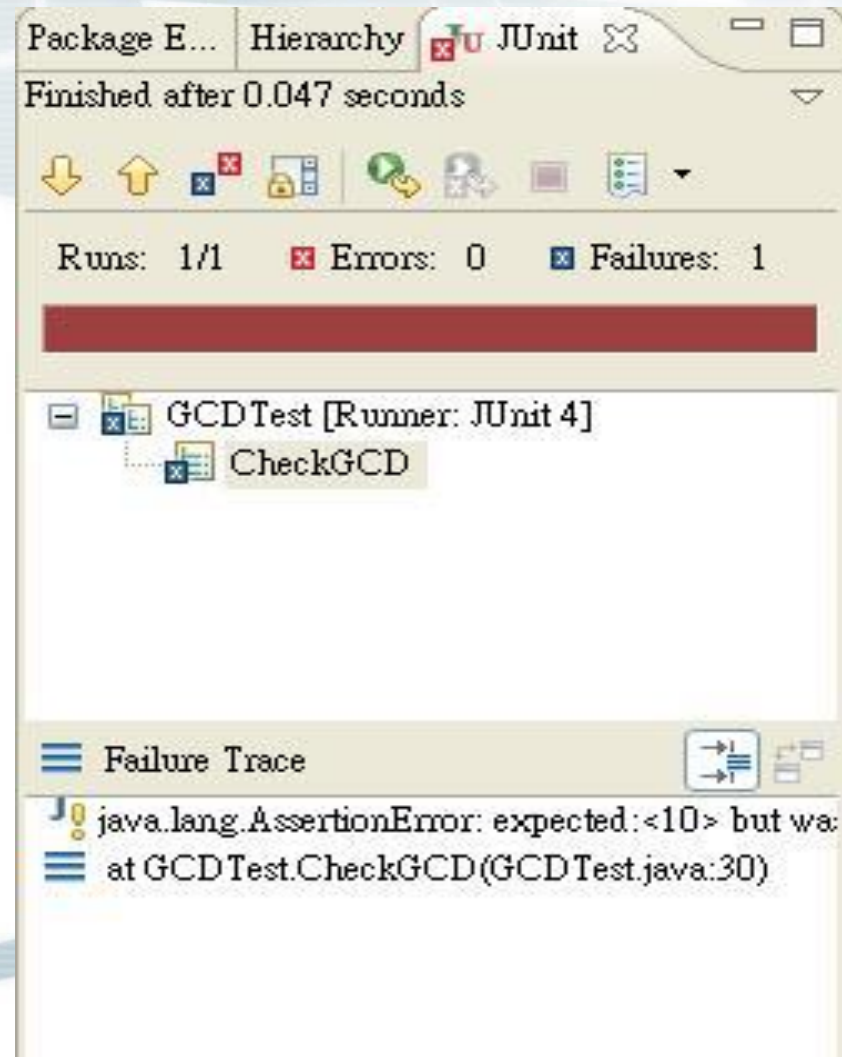
    /* 處理結束之後動作，利用 @After annotation，method名稱可取自己想要的名稱，
       不用一定要取為tearDown */
    @After
    public void cleanObject() throws Exception {
        gcd = null;
    }

    /* 測試的method，前面加上@Test annotation，method名稱可取自己想要的名稱，
       不必以test開頭 */
    @Test
    public void CheckGCD()
    {
        assertEquals(5, gcd.getGCD(10, 5));
    }
}
```

# JUnit in Eclipse(Cont.)

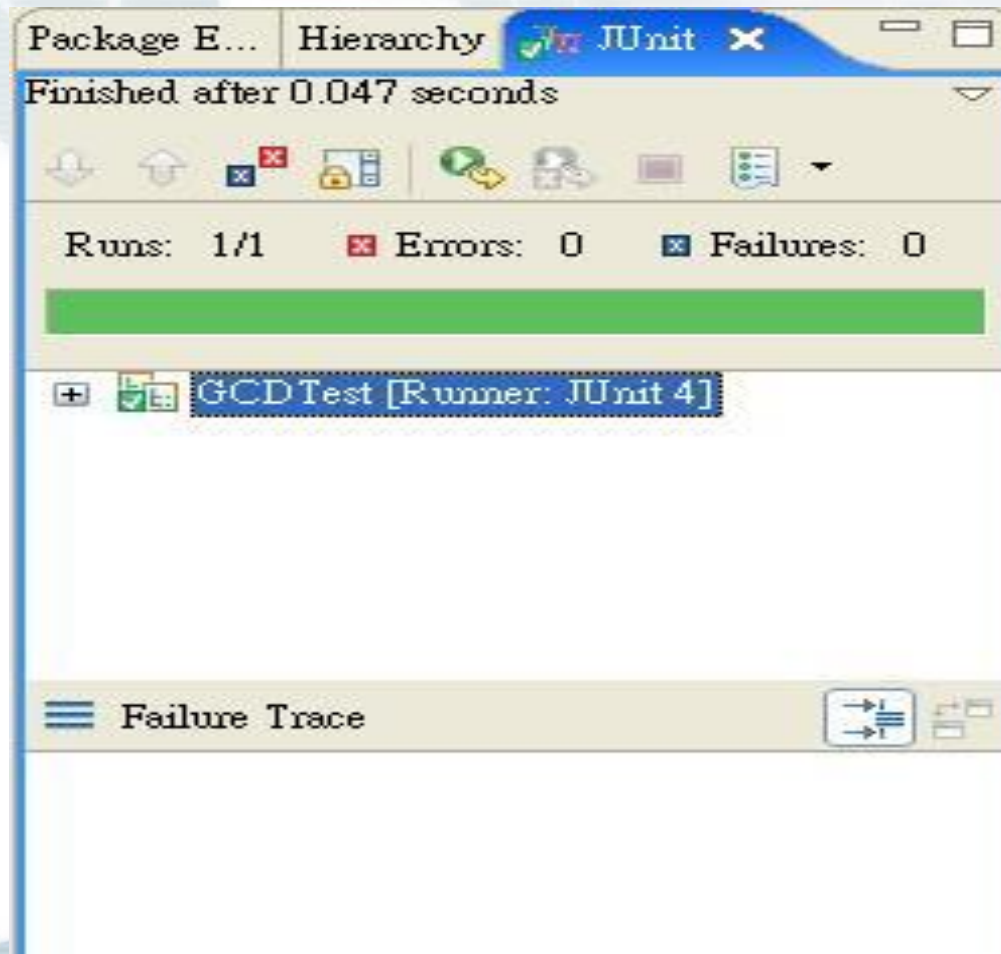


# JUnit in Eclipse(Cont.)





# JUnit in Eclipse(Cont.)



# References

- [http://junit.sourceforge.net/doc/faq/faq.htm#overview\\_1](http://junit.sourceforge.net/doc/faq/faq.htm#overview_1)
- <http://www.ibm.com/developerworks/tw/library/j-junit4.html>
- <http://caterpillar.onlyfun.net/Gossip/JUnit/JUnitGossip.html>